



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/676,519	09/30/2003	Yu-Fei Ma	MSI-1640US	8301
22801	7590	10/15/2007	EXAMINER	
LEE & HAYES PLLC 421 W RIVERSIDE AVENUE SUITE 500 SPOKANE, WA 99201			MOTSINGER, SEAN T	
ART UNIT		PAPER NUMBER		
2624				
MAIL DATE		DELIVERY MODE		
10/15/2007		PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)
	10/676,519	MA ET AL.
	Examiner	Art Unit
	Sean Motsinger	2624

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 7/26/2007.
 2a) This action is **FINAL**. 2b) This action is non-final.
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 1-26 is/are pending in the application.
 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
 5) Claim(s) _____ is/are allowed.
 6) Claim(s) 1-14 and 18-26 is/are rejected.
 7) Claim(s) 15-17 is/are objected to.
 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.
 10) The drawing(s) filed on 30 September 2003 is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) Notice of References Cited (PTO-892)
 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
 3) Information Disclosure Statement(s) (PTO/SB/08)
 Paper No(s)/Mail Date 6/11/2007, 4/2/2007.

4) Interview Summary (PTO-413)
 Paper No(s)/Mail Date. _____.
 5) Notice of Informal Patent Application
 6) Other: _____.

Response to Applicants Arguments/Amendments

1. The argument/amendment to the claims filed on 7/26/2007 has been entered and made of record and is considered below.
2. Regarding the rejection to Claims 7-17 under 35 U.S.C. 101, applicants arguments have been considered and are persuasive. The amendment to claims 7 and 8 are sufficient to overcome the rejection
3. Regarding the rejection to claims 8-21 Under 35 U.S.C. 112 first paragraph applicants arguments have been considered and are persuasive. The amendment to claims 8 and 18 are sufficient to overcome the rejection to claims 8-21
4. Regarding the rejection to claims 8-13 and 15-21 Under 35 U.S.C. 112 second paragraph applicants arguments have been considered and are persuasive. The amendment to claims 8 and 18 are sufficient to overcome the rejection to claims 8-13 and 15-21.
5. Regarding the rejection to claim 14 Under 35 U.S.C. 112 second paragraph applicants arguments have been considered however they are not persuasive. Applicant states in his argument that the term "fuzzy growing" is clear, because

paragraphs 48-50 would apprise one of ordinary skill in the art of both the **utilization and scope** of the claim. However examiner disagrees while this is sufficient to describe the utilization it is not sufficient apprise one of ordinary skill in the art of the scope of the claim and the language is not "as precise as the subject matter permits". Paragraph 48- 50 provides a detailed description of a growing process which he describes as fuzzy but provides not explicit definition of what elements are necessary to comprise "fuzzy growing" it is not clear what characteristics of this description are embodied by the word fuzzy and therefore one of ordinary skill in the art would not be reasonably apprised of the scope. Note claim 15 also uses the term fuzzy growing but does require a rejections under 35 U.S.C. 112 2nd paragraph rejection because the claim describes lists what the fuzzy growing operation comprises so the scope is clear. Applicant can overcome this rejection by adding language to clarify what feature(s) make the growth "fuzzy", deleting the word "Fuzzy" from the claim if the word carries not intended to carry any meaning , or amending the claims to include paragraphs 48-50 if "fuzzy growth" is intended encompass the entirety of paragraphs 48-50 in the specification as what seems to be indicated in applicants arguments.

6. Regarding the rejections to claim 1 under 35 U.S.C. 103 over Osberger in view of Deng applicants arguments have been fully considered but are not persuasive. Applicant claims that although the image is quantized there is not quantized set of

image blocks. Examiner disagrees with this interpretation since the "blocks" in the set could be interpreted as the image itself being a block or it could be interpreted such that each block is one pixel in size. Therefore since Deng has a set of pixels it teaches a set of blocks.

7. Regarding the rejections to claim 3 under 35 U.S.C. 103 over Osberger in view of Deng applicants arguments have been fully considered but are not persuasive. Applicant seems to be arguing that the regions described in Osberger cannot be perception units. The examiner disagrees, the examiner is required to give the claim its broadest reasonable interpretation, a region can be a unit (a single thing, person, or group that is a constituent of a whole) which is perceived (attain awareness or understanding) note the act of segmenting makes it perceived.

8. Regarding the rejection to claim 4-6 under 35 U.S.C. 103 over Osberger in view of Deng applicants arguments have been fully considered but are not persuasive. Applicant states that an "extracting attended points" (or attended view or area) requires more then "indicating a region of interest" but makes no indication of why it requires more or what more it requires. Examiner disagrees, on the contrary these claims are broader or require less then a region of interest all they require is extracting something with can be called a point view or area. It is attended by the mere fact it is being extracted.

9. Regarding the rejection to claims 2, 7, 8-10, 13 and 18-26 under 35 U.S.C. 103 over Osberger in view of Deng in further view of Stentiford. These arguments rely on similar features argued in claims 1 these rejections are likewise maintained.
10. Regarding the rejection to claims 8 under 35 U.S.C. 103 over Warnick in view of Deng in further view of Stentiford. Applicant argues that Warnick does not disclose a activity map which is based on contrast saliency, but relies on edge detection, local entropy, and local texture. Contrast is only vague term referring to " the difference or degree of difference between things having similar or comparable natures". In this sense all of the above features are measures of contrast, for example applicant should know note that in an image edge is mealy a segment of high contrast. Furthermore as sighted in the previous action Warnick uses embodiment see column 4 lines 30-60 Warnik uses a measure of activity, which is very similar to applicants, and is clearly based on contrast.
11. Applicant claims that although the image is quantized there is not quantized set of image blocks. Examiner disagrees with this interpretation since the "perception units" in the set could be interpreted as one pixel in size. Therefore since Deng has a set of pixels it teaches a set of perception units. Applicant states in paragraph 36 of his own specification that a perception unit can be a pixel
12. Applicant also claims there are no perception units in Warnick however applicant states in paragraph 36 of his own specification that a perception unit can be a pixel.

Rejections under 35 U.S.C. 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

13. Claim 14 1s rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

14. Re claim 14, Claim 14 states the language "fuzzy growing". It is not known what makes growing "fuzzy". Applicant needs to include a explicit definition of the term "fuzzy growing" in the claim to make this clear. One of ordinary skill in the art would not know the scope of the claim because it is not clear what features make the growing "fuzzy" For the purposes of examination examiner interprets "fuzzy growing" as "growing."

Rejections under 35 U.S.C. 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

- (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

15. Claims 1, 3-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Osberger US 6670963 in view of "*Peer group filtering and perceptual color image quantization*" Yining Deng; Kenney, C.; Moore, M.S.; Manjunath, B.S.; Circuits and Systems, 1999. ISCAS '99. Proceedings of the 1999 IEEE International Symposium on Volume 4, 30 May-2 June 1999 Page(s):21 - 24 vol.4.
16. Re claim 1 Osberger discloses a method for modeling image attention, the method comprising: generating a contrast-based (note the map depends on contrast see column 5 lines 60-61) saliency map (importance map column 2 lines 39-40) for modeling one-to-three levels of image attention from the quantized image blocks (note this section is intended use and the saliency map only need be capable of being used to accomplish it).
17. Osberger does not disclose preprocessing an image to generate a quantized set of image blocks.
18. However Deng discloses preprocessing an image to generate a quantized set of image blocks (see section 5 first paragraph). The motivation to combine is that Deng states "The results of color quantization can be used in color image segmentation." Therefor it would have been obvious to one of ordinary skill in the art to combine Osberger with Deng to reach the aforementioned advantage.

19. Re claim 3 Osberger discloses wherein generating the contrast-based saliency map further comprises: dividing the image subsequent to quantization into multiple perception units (regions column 3 lines 9-11); and calculating a respective contrast of color components for each perception unit (lines 60- 67); and normalizing calculated contrasts (column 6 lines 3-6) to smooth the contrasts.
20. Re claim 4 Osberger discloses extracting attended points from the contrast-based saliency map (column 2 lines 16-21 figure 2(b) note a region of interest is found, since this is a digital picture, the region will be a collection of pixels i.e. points).
21. Re claim 5 Osberger discloses extracting attended area from the contrast-based saliency map (region column 2 lines 16-21 figure 2(b)).
22. Re claim 6 Osberger discloses extracting attended view from the contrast-based saliency map (region column 2 lines 16-21 figure 2(b) Note a region is a view.)
23. Claims 2, 7 8-10, 13 18-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Osberger, in view of Deng, in futher view of Stentiford US 6,934,415.

24. Re claim 2 Deng further discloses wherein preprocessing further comprises: transforming the image from a first color space to a second color space that is consistent with human perception (page 3 section 4 paragraph 4 also note all color spaces are consistent with human perception); and making color in texture areas (detailed regions) of the image coarser (see section 3 paragraph 2).
25. Deng does not disclose resizing the image such that an aspect ratio of the image is maintained;
26. Stentiford discloses resizing the image such that an aspect ratio of the image is maintained (column 10 lines 45-50 figure 12 note processing is only preformed on a subset of pixels, note from figure 12 the aspect ratio is the same). Note the motivation to combine is to "increase speed of operation" see column 10 lines 46-47.
27. Re claim 7, note this claim comprises computer readable medium storing instructions comprising the method of claim 1 (see rejection for claim 1 to show the method) Osberger does not discloses performing his method on a computer or the corresponding computer program. Stentiford discloses using such a computer readable medium on (column 3 lines 12 –15). The motivation to combine is that such methods are well know to be preformed much faster by a computer. Therefor it would have been obvious to one of ordinary skill in the art to combine Osberger with Deng and Stentiford to reach the aforementioned advantage.

28. Re Claim 8 Osberger discloses, generating a contrast-based saliency map (importance map column 2 lines 38-40) from the quantized image blocks, the contrast-based saliency map comprising a respective contrast of color components (color contrast column 5 line 60) for each perception unit (region column 5 line 61).
29. Osberger does not disclose resizing the image such that an aspect ratio of the image is maintained; and if the image is not already in a color space that is consistent with human perception, transforming the image from a first color space to a second color space that is consistent with human perception; quantizing the preprocessed image to generate quantized image perception units such that color in texture areas across the quantized image perception units are coarser as compared to the image; Osberger also does not disclose implementing his method via a computer program stored on a computer readable medium.
30. Deng discloses generating a preprocessed image by: if the image is not already in a color space that is consistent with human perception, transforming the image from a first color space to a second color space that is consistent with human perception (page 3 section 4 paragraph 4 also note all color spaces are consistent with human perception); quantizing the preprocessed image to generate quantized image perception units (see section 5 first paragraph) such that color in texture areas across the quantized image perception units are coarser(see section 3 paragraph 2) as compared to the image. The motivation to combine is that Deng states "The results of color quantization can be used in color image segmentation."

Therefor it would have been obvious to one of ordinary skill in the art to combine Osberger with Deng to reach the aforementioned advantage.

31. Stentiford discloses resizing the image such that an aspect ratio of the image is maintained (column 10 lines 45-50 figure 12 note processing is only preformed on a subset of pixels, note from figure 12 the aspect ratio is the same). Stentiford discloses using a computer readable medium to store code for a similar method (column 3 lines 12 –15). Note the motivation to combine is to “increase speed of operation” see column 10 lines 46-47 and such methods are well know to be preformed much faster by a computer. Therefor it would have been obvious to one of ordinary skill in the art to combine Osberger with Deng and Stentiford to reach the aforementioned advantage.
32. Re Claim 9 Osberger discloses wherein the computer-program instructions further comprise instructions for extracting attended points from the contrast-based saliency map (column 2 lines 16-21 figure 2(b) note a region of interest is found, since this is a digital picture, the region will be a collection of pixels i.e. points).
33. Re Claim 10 Osberger discloses wherein the computer-program instructions further comprise instructions for extracting attended view from the contrast-based saliency map (region column 2 lines 16-21 figure 2(b) Note a region is a view).

34. Re Claim 13 Osberger discloses wherein the computer-program instructions further comprise instructions for extracting attended area from the contrast-based saliency map (region column 2 lines 16-21 figure 2(b)).
35. Re claim 18 Osberger generating a contrast-based saliency map (importance map column 2 lines 38-40) from the quantized image blocks, the contrast-based saliency map comprising a respective contrast of color components (color contrast column 5 line 60) for each perception unit (region column 5 line 61).
36. Osberger does not disclose quantizing a preprocessed image to generate quantized image perception units such that color in texture areas across the quantized image perception units are coarser as compared to the image, the preprocessed image being a resized version of the image with an original aspect ratio and in a color space consistent with human perception.
37. Deng discloses quantizing the preprocessed image to generate quantized image perception units (see section 5 first paragraph) such that color in texture areas across the quantized image perception units are coarser (see section 3 paragraph 2) as compared to the image; the processed image being in a color space consistent with human perception (page 3 section 4 paragraph 4 also note all color spaces are consistent with human perception). The motivation to combine is that Deng states "The results of color quantization can be used in color image segmentation."
38. Stentiford discloses resizing the image such that an aspect ratio of the image is maintained (column 10 lines 45-50 figure 12 note processing is only preformed on a

subset of pixels, note from figure 12 the aspect ratio is the same). Stentiford discloses using a computer readable medium to store code for a similar method (column 3 lines 12 –15). Note the motivation to combine is to "increase speed of operation" see column 10 lines 46-47 and such methods are well known to be preformed much faster by a computer. Therefor it would have been obvious to one of ordinary skill in the art to combine Osberger with Deng and Stentiford to reach the aforementioned advantage.

39. Re claim 19 Osberger discloses wherein the computer-program instructions further comprise instructions for extracting attended points from the contrast-based saliency map (column 2 lines 16-21 figure 2(b) note a region of interest is found, since this is a digital picture, the region will be a collection of pixels i.e. points).
40. Re claim 20 Osberger discloses wherein the computer-program instructions further comprise instructions for extracting attended area from the contrast-based saliency map (region column 2 lines 16-21 figure 2(b)).
41. Re claim 21 Osberger discloses wherein the computer-program instructions further comprise instructions for extracting attended view from the contrast-based saliency map (region column 2 lines 16-21 figure 2(b) Note a region is a view).

42. Re claims 22-26 these claims correspond to the means for performing the method of claims 1 and 3-6 respectively. This means has been interpreted to be a computer system configured with the appropriate software to perform the method. Osberger and Deng disclose the method (see rejections for claims 1 and 3-6) however they do not disclose implementing their method on such a system. Stentiford discloses using a computer and software to implement a similar system (column 3 lines 9-10). The motivation to combine is that such methods are well known to be performed much faster by a computer. Therefore it would have been obvious to one of ordinary skill in the art to combine Osberger with Deng and Stentiford to reach the aforementioned advantage.

43. Claims 8-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Warnick US 5,901,245 in view of Deng in further view of Stentiford.

44. Re claim 8 Warnick discloses, a computer-readable medium comprising computer-program instructions for modeling image attention (see column 3 lines 1-6), the computer-program instructions being executable by a processor for modeling image attention by: generating a contrast-based (note the map depends on contrast see column 4 line 19) saliency map (activity map column 4 line 20), the contrast-based saliency map comprising a respective contrast of color components (column 4 lines 30-35 note this uses color differencing to find contrast) for each perception unit (pixel).

45. Warnick does not disclose generating a preprocessed image by: resizing the image such that an aspect ratio of the image is maintained; and if the image is not already in a color space that is consistent with human perception, transforming the image from a first color space to a second color space that is consistent with human perception; quantizing the preprocessed image to generate quantized image perception units such that color in texture areas across the quantized image perception units are coarser as compared to the image.

46. Deng discloses generating a preprocessed image by: if the image is not already in a color space that is consistent with human perception, transforming the image from a first color space to a second color space that is consistent with human perception (page 3 section 4 paragraph 4 also note all color spaces are consistent with human perception); quantizing the preprocessed image to generate quantized image perception units (see section 5 first paragraph) such that color in texture areas across the quantized image perception units are coarser(see section 3 paragraph 2) as compared to the image. The motivation to combine is that Deng states "The results of color quantization can be used in color image segmentation." Therefor it would have been obvious to one of ordinary skill in the art to combine Warnick with Deng to reach the aforementioned advantage.

47. Stentiford discloses resizing the image such that an aspect ratio of the image is maintained (column 10 lines 45-50 figure 12 note processing is only preformed on a subset of pixels, note from figure 12 the aspect ratio is the same). Note the motivation to combine is to "increase speed of operation" see column 10 lines 46-47

and such methods are well known to be performed much faster by a computer.

Therefor it would have been obvious to one of ordinary skill in the art to combine Warnick with Deng and Stentiford to reach the aforementioned advantage.

48. Re claim 9 Warnick discloses wherein the computer-program instructions further comprise instructions for extracting attended points (pixels see column 7 lines 5-10 note the reference is detecting open spaces which are attended points) from the contrast-based saliency map (activity map).
49. Re claim 10 Warnick discloses wherein the computer-program instructions further comprise instructions for extracting an attended view (detected open space shape column 8 lines 12-17) from the contrast-based saliency map (attention map).
50. Re claim 11 Warnick discloses wherein the computer-program instructions further comprise instructions for extracting an attended view from the contrast-based saliency map (see rejection for claim 10), the attended view being a rectangle (column 8 line 17) $V(C, W, H)$, where C denotes an attention center, and W and H are the width and height of rectangle respectively (column 8 major and minor axis lines 13-15), the attention center being a centroid of the contrast-based saliency map (Note that the rectangle must contain some local centroid of open space of called an attention center).

51. Re claim 12 Warnick discloses wherein the computer-program instructions further comprise instructions for determining a size of an attended view (column 8 line 15 finding the smallest rectangle implies finding the size) in the contrast-based saliency map, the size being related to a 1st order central moment of the contrast-based saliency map. (Note the size of the view is related to the size of the open space, the size of the open space will have a relationship to a 1st order central moment of the contrast-based saliency map.)

52. Re Claim 13 Warnick discloses wherein the computer-program instructions further comprise instructions for extracting attended area (open space column 7 lines 44-46 figure 3(d)) from the contrast-based saliency map.

53. Re Claim 14 Warnick discloses wherein the computer-program instructions further comprise instructions for extracting attended areas from the contrast-based saliency map by performing a growing operation (region growing operation line 25) on the contrast-based saliency map as a function of two classes of pixels (column 7 line 7 note the pixels are define as 0 or 1 so there are two classes) to partition the contrast-based saliency map into two mutually exclusive areas(produce an open space map column 7 lines 26-28 figure 3d note it is partitioned into two areas "open space" and not open space), the two classes of pixels comprising attended (1 column 7 line 7) and unattended pixel areas (0 column 7 line 7).

Allowable subject matter

54. Claims 15-17 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Claim 16 contains allowable subject matter because none of the prior art of record discloses modeling the saliency map as a fuzzy event in probability space. Claim 17 contains allowable subject matter because it depends from claim 16. Claim 15 is allowable because while iterative region growing based on seeds is well known the art of record (see "Seeded region growing" Adams, R.; Bischof, L.; Pattern Analysis and Machine Intelligence, IEEE Transactions on Volume 16, Issue 6, June 1994 Page(s):641 – 647, it is not combinable in this case because Warnick would not seeded at a point of maximum contrast.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sean Motsinger whose telephone number is 571-270-1237. The examiner can normally be reached on 9-5 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jingge Wu can be reached on (571)272-7429. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Motsinger
10/2/2007

JINGGE WU
SUPERVISORY PATENT EXAMINER